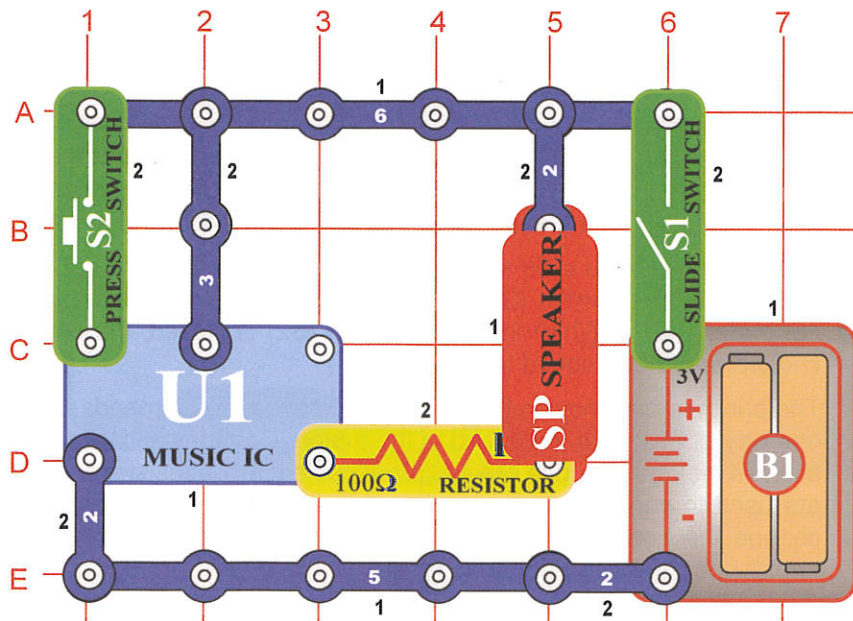




Project #15



Musical Doorbell

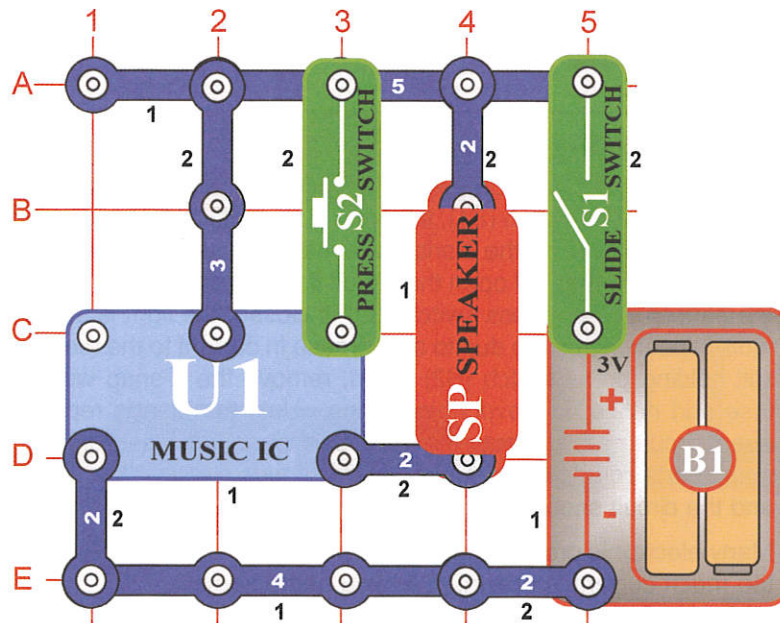
OBJECTIVE: To show how an integrated circuit can be used as a musical doorbell.

Build the circuit shown on the left. When you close the slide switch (S1), the music integrated circuit (U1) may start playing one song then stop. Each time you press the press switch "doorbell button" (S2) the song will play again and stop. Even if you let go of the press switch (S2), the integrated circuit keeps the song playing until it has reached the end of the song.

Musical integrated circuits are used to entertain young children in many of the toys and chairs made to hold infants. If the music is replaced with words, the child can also learn while they are entertained. Because of great advances in miniaturization, many songs are stored in a circuit no bigger than a pinhead.



Project #16



Momentary Alarm

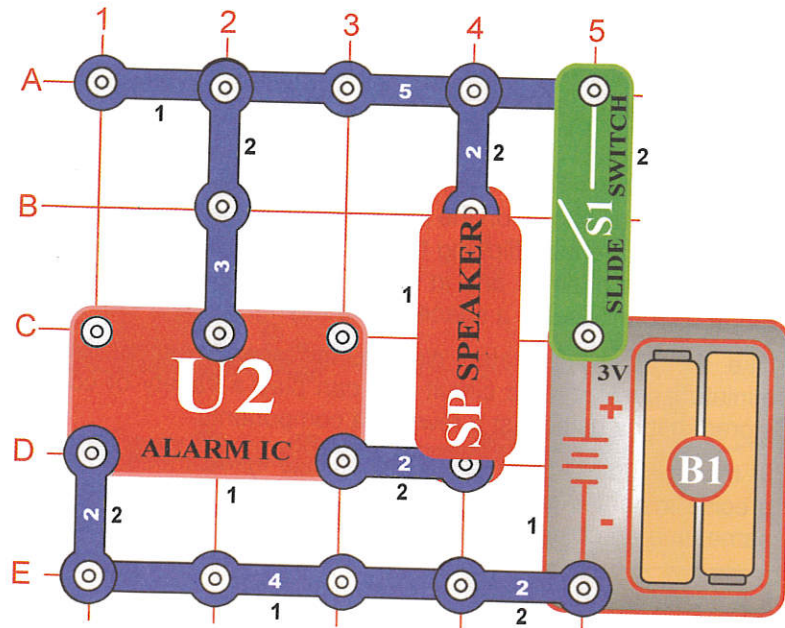
OBJECTIVE: To show how integrated circuits can also create loud alarm sounds in case of emergencies.

Modify the circuit used in Project 15 to look like the one shown on the left.

When you close the slide switch (S1), the music integrated circuit (U1) may start playing one song then stop. The song will be much louder than in the previous project because it is now being used as an alarm. Each time you press the press switch "alarm button" (S2) after the song stops playing, the song will play again, but only while you hold the button down.



Project #17



Alarm Circuit

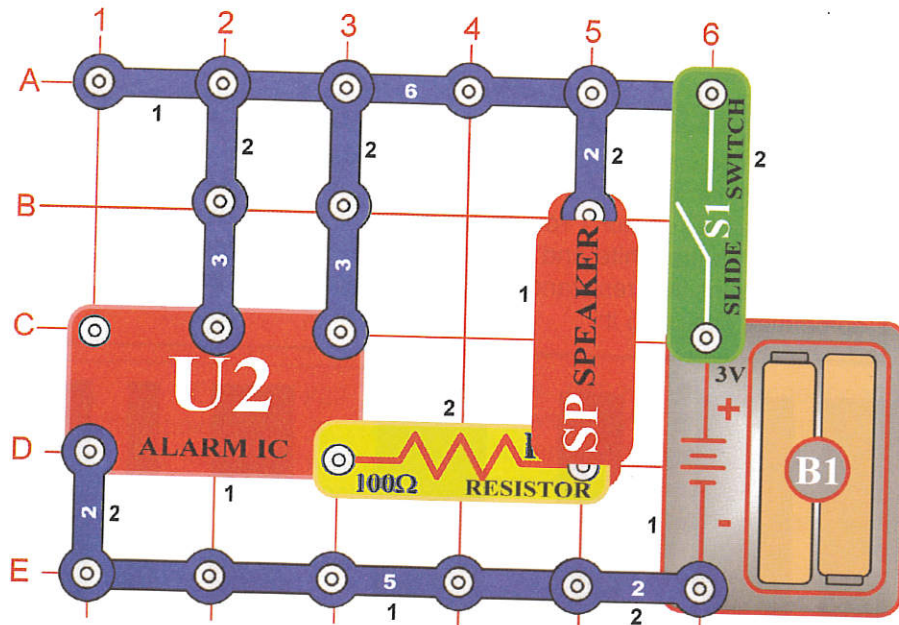
OBJECTIVE: To show how an integrated circuit can be used to make real alarm sounds.

Build the circuit shown on the left by placing all the parts with a black 1 next to them on the board first. Then, assemble parts marked with a 2. When you close the slide switch (S1), the integrated circuit should start sounding a very loud alarm sound. This integrated circuit is designed to sweep through all the frequencies so even hard of hearing people can be warned by the alarm.

If the alarm sound was passed through an amplifier and installed into a police car, it would also serve as a good police siren.



Project #18



Laser Gun

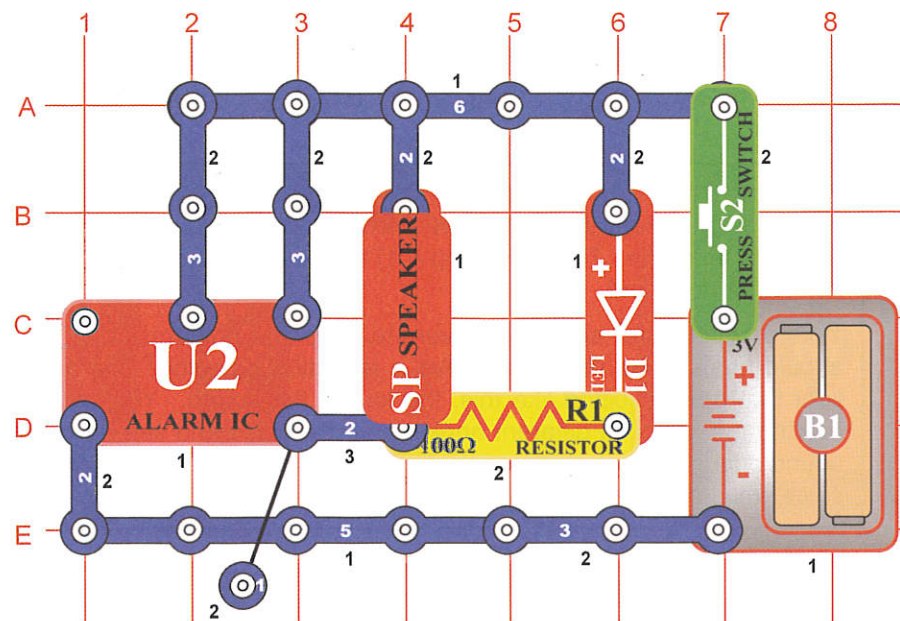
OBJECTIVE: To show how integrated circuits sound can easily be changed to exciting space war sounds.

Build the circuit shown on the left by placing all the parts with a black 1 next to them on the board first. Then, assemble parts marked with a 2.

When you close the slide switch (S1), the integrated circuit should start sounding a laser gun sound. This integrated circuit is designed to produce different sounds that can easily be changed. You can even switch the sound on and off quickly to add sound effects to your games or recordings.



Project #53



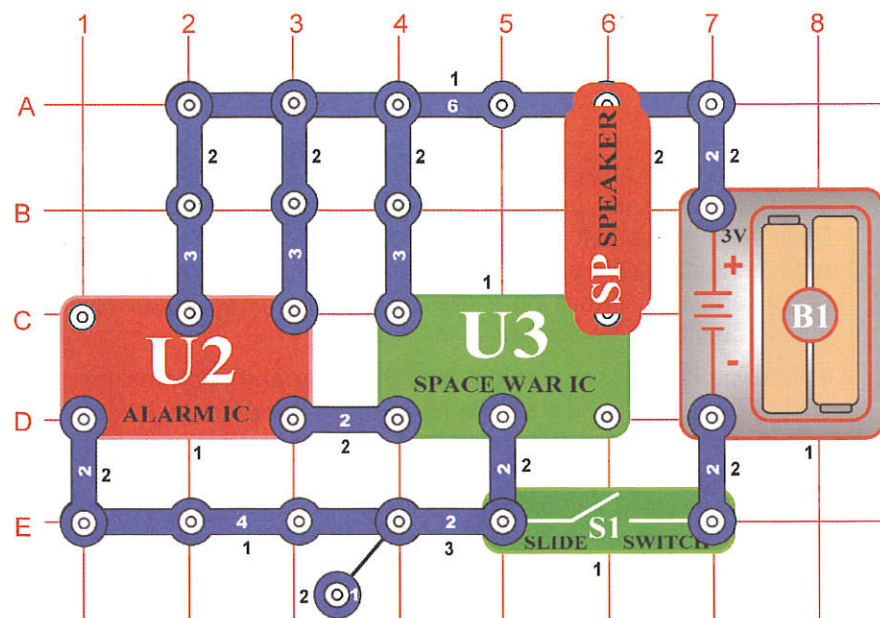
Flashing Laser Light with Sound

OBJECTIVE: To build the circuit used in a toy laser gun with flashing laser light and trigger.

When you press the press switch (S2), the integrated circuit should start sounding a very loud laser gun sound. The red LED will flash simulating a burst of laser light. You can shoot long repeating laser burst, or short zaps by tapping the trigger switch.



Project #54



Space War Flicker

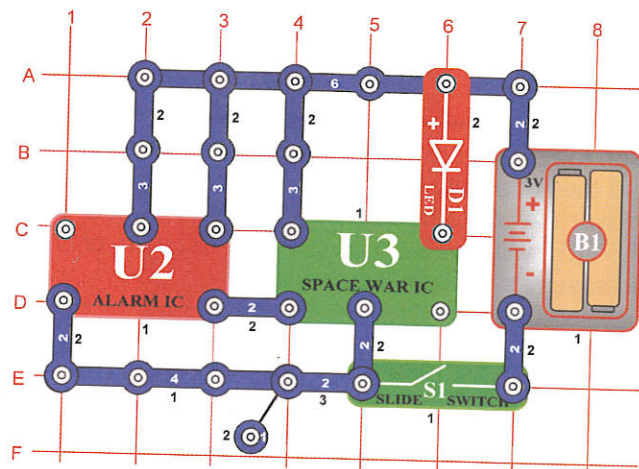
OBJECTIVE: To build a circuit using the space war IC to make exciting sounds.

Build the circuit shown on the left, which uses the Space War integrated circuit.

Set the switch on and the speaker makes exciting sounds. The output of the IC can control lights, speakers, and other low power devices.

You may replace the speaker (SP) with the 2.5V lamp (L1), and the bulb will flicker. You can also use the LED (D1) in place of the lamp (position it with the "+" side towards the 6-snap).

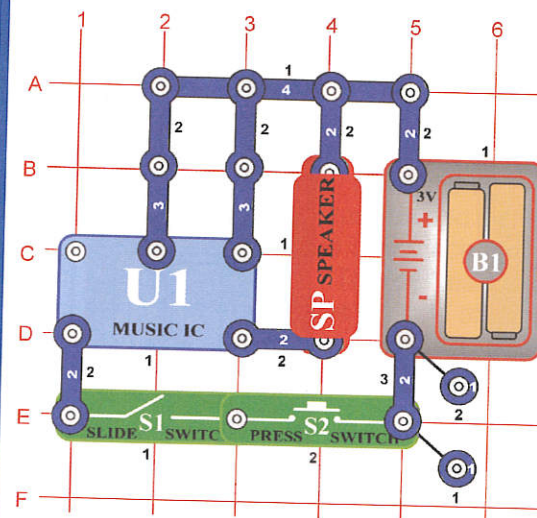
Project #77 Space War Flicker LED



OBJECTIVE:
Flash an LED
using the space
war IC.

Build the circuit
shown on the left.
The circuit uses
the Alarm and
Space War IC's to
flash the LED (D1).
Turn the switch on
and the LED starts
flashing.

Project #78 Music AND Gate

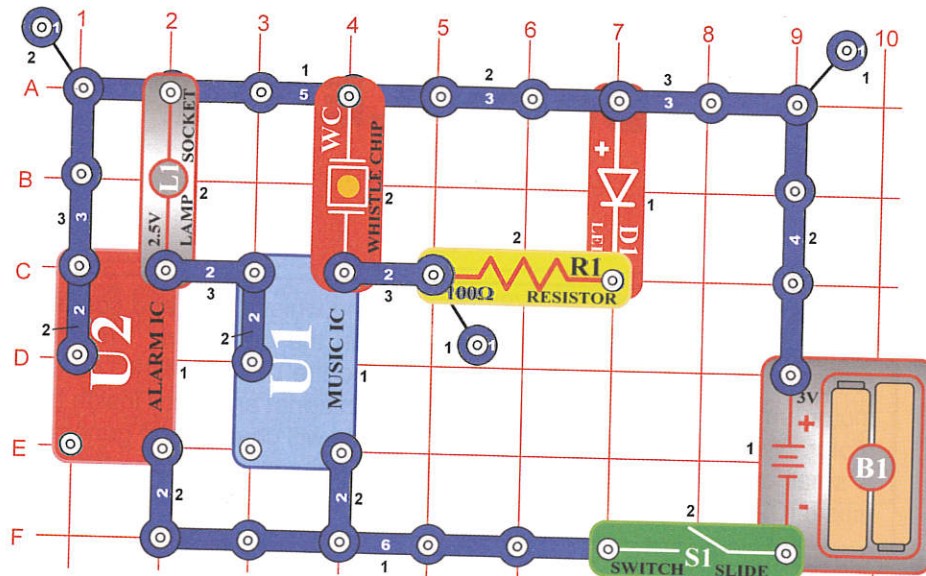


OBJECTIVE:
To build an AND gate.

You will only hear music if
you turn on the slide
switch (S1) AND press the
press switch (S2). This is
referred to as an AND
gate in electronics.
This concept is important
in computer logic.

Example: If condition X
AND condition Y are true,
then execute instruction Z.

Project #79

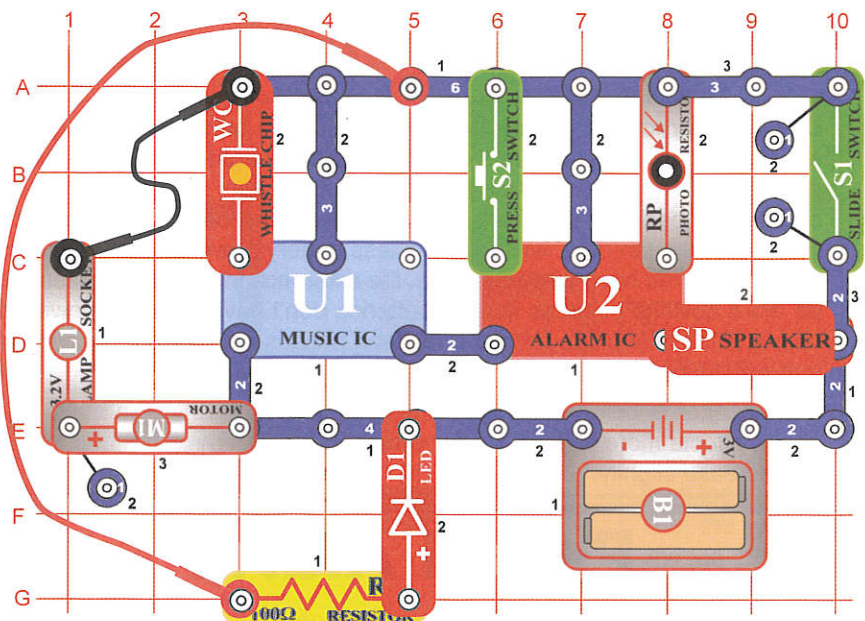


OBJECTIVE: Build a circuit that flashes light and plays sounds.

Turn the switch on and the lamp and LED starts flashing. You hear two
different tones driving LED and lamp. IC's can be connected to control
many different devices at the same time.



Project #83



Fun with the Alarm IC

OBJECTIVE: To show some new ways of using the alarm IC.

Build the circuit shown and place the fan on the motor, but leave the jumpers off for the time being. Turn on the slide switch (S1) and tap the whistle chip (WC), it makes a machine gun sound (with music in the background). Thoroughly cover the photoresistor (RP) with your hand and the sound becomes a siren. With the photoresistor covered, press the press switch (S2) and the sound becomes that of an ambulance. Uncover the photoresistor and the sound remains that of a machine gun whether the press switch (S2) is pressed or not. After a while the sound will stop, tap the whistle chip and it resumes.

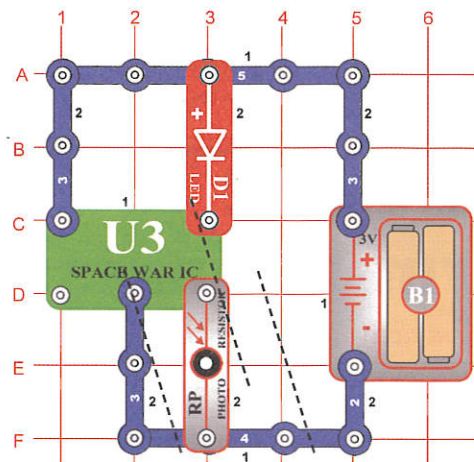
Connect the two jumpers as shown and tap the whistle chip to resume the sound. The lamp (L1) and LED (D1) are lit and the motor spins. The sound continues, but it may become distorted as the motor speeds up. The motor draws a lot of power from the batteries, and this may reduce the voltage to the music and alarm ICs, distorting the sound. The sound may even stop if your batteries are weak.



WARNING: Moving parts. Do not touch the fan or motor during operation.

Project #84

OBJECTIVE: To connect multiple devices together.



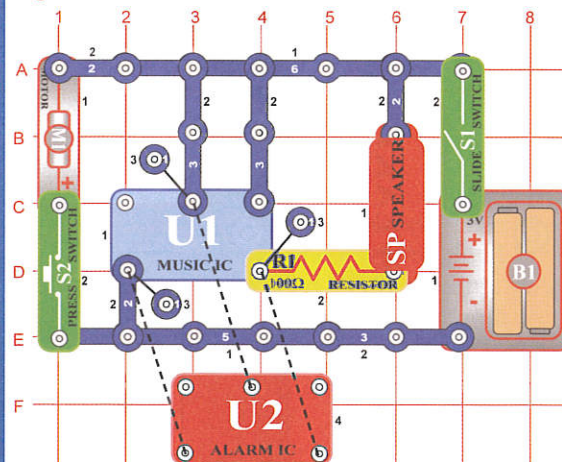
WARNING: Moving parts. Do not touch the fan or motor during operation.

Motor Sounds Combo

In the circuit, the outputs from the alarm and music ICs are connected together. Build the circuit shown and then place the alarm IC (U2) directly over the music IC (U1), resting on two 1-snaps and a 2-snap. Turn on the slide switch (S1) and you will hear a siren and music together while the lamp varies in brightness. Push the press switch (S2) and the fan spins, while the sound may not be as loud. The fan may rise into the air when you release the switch.

Project #85

OBJECTIVE: To connect multiple devices together.



WARNING: Moving parts. Do not touch the fan or motor during operation.

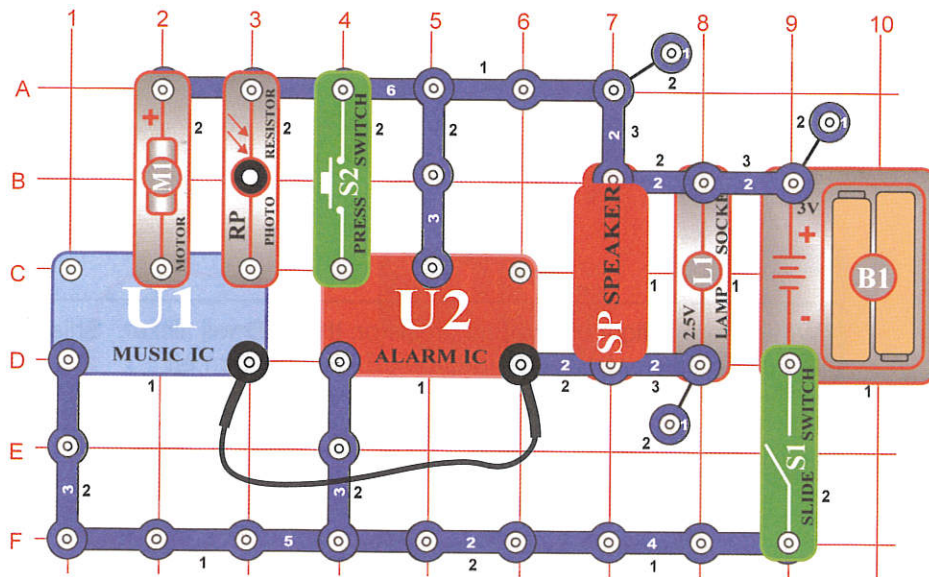
Motor Sounds Combo (II)

In the circuit, the outputs from the alarm and music ICs are connected together. Build the circuit shown and then place the alarm IC (U2) directly over the music IC (U1), resting on three 1-snaps. Turn on the slide switch (S1) and you will hear a siren and music together. Push the press switch (S2) and the fan spins, while the sound may not be as loud. The fan may rise into the air when you release the switch.

This circuit is similar to project #89, but the fan will fly a little higher since the sound circuit no longer drives the lamp (L1) and therefore uses less battery power.



Project #86



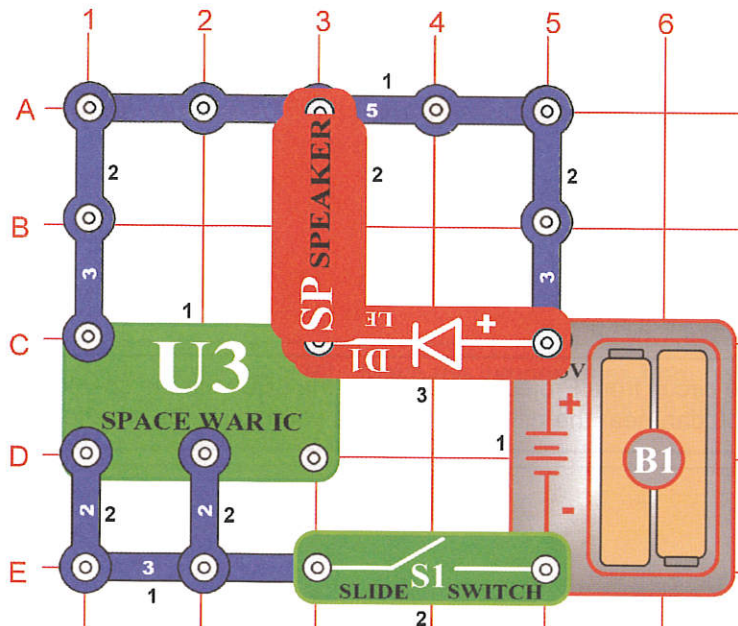
Music Alarm Combo

OBJECTIVE: To combine the sounds from the music and alarm integrated circuits.

Build the circuit shown and add the jumper to complete it. Turn it on and you will hear a siren and music together. Press the press switch (S2) and the siren changes to a fire engine sound. After a few seconds, covering the photoresistor will stop the music (but the siren continues). The motor is used here as a 3-snap wire and will not spin.



Project #87



Bomb Sound

OBJECTIVE: Build a circuit that sounds like a bomb dropping.

Turn the switch on and you hear the sound of a bomb dropping and then exploding. The LED lights and then flashes as the bomb explodes. This is one sound generated from the space war IC.



Project #88

Bomb Sound (II)

OBJECTIVE: Build a circuit that sounds like a bombs dropping.

Use the circuit from Project #87. Replace the switch with the motor (M1). Turn the shaft on the motor and now it sounds like a bunch of bombs dropping.